



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

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*** *** ***



AUTO SAFETY HOTLINE
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Wash. D.C. Area 366-0123

CALSPAN CORPORATION

Accident Research Section
[REDACTED], New York 14225

CALSPAN LIMITED ON-SITE AIR BAG DEPLOYMENT INVESTIGATION

CASE NO. 90-19

FLEET - 1990 FORD TAURUS GL STATION WAGON

LOCATION - [REDACTED] NY

ACCIDENT DATE - [REDACTED] 1990

Contract No. DTNH22-87-C-07169

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
Washington, D.C. 20590

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points are coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

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TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. Calspan Case No. 90-19		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Calspan Limited On-Site Air Bag Deployment Investigation Fleet - 1990 Ford Taurus Station Wagon Location - ████████, NY				5. Report Date ██████, 1991	
				6. Performing Organization Code	
7. Author(s) Accident Research Section				8. Performing Organization Report No.	
9. Performing Organization Name and Address Calspan Corporation Accident Research Section ██████████ Buffalo, NY 14225				10. Work Unit No. ██████████	
				11. Contract or Grant No. DTNH22-87-C-07169	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Washington, D.C. 20590				13. Type of Report and Period Covered Technical Report Accident Date - ██████/90	
				14. Sponsoring Agency Code	
15. Supplementary Notes Limited on-site investigation of an air bag deployment crash that involved a 1990 Ford Taurus station wagon.					
16. Abstract This limited on-site investigative report focuses on a 1990 Ford Taurus station wagon that impacted the rear of a 1979 Pontiac. The Pontiac stopped suddenly in preparation for a left turn into a shopping plaza. The 12 o'clock/ 6 o'clock impact configuration resulted in a sufficient longitudinal deceleration to deploy the Ford Taurus' driver air bag system. The 54 year old female driver of the Ford Taurus was wearing the active 3-point lap and shoulder belt system. At impact, she moved forward in response to the frontal impact and loaded the deployed air bag with her facial area. Her contact with the air bag resulted in a 1 cm abrasion of the chin, swelling of the lips, abrasions of both cheeks with surrounding hematoma, and a forehead abrasion. The air bag displaced and fractured the driver's eyeglasses (graphite type material) into numerous pieces. The eyeglass lenses remained intact; however, they resulted in hematoma and contusion of both upper and lower eyelids. The fractured frames produced three lacerations of the forehead located above the eyebrows and bridge of the nose. Lip stick and makeup transfers evidenced the driver's contact with the air bag at the 8:30 - 10 o'clock position. The driver's husband inspected the air bag module assembly and noted generant residue on the inside surface of the bag at the 6:30 to 7:30 o'clock position adjacent to the inflator assembly. He suspected a burn-through of the filtering media at this position which he believed resulted in an asymmetrical (lopsided) deployment of the driver air bag. The Accident Research Team inspected the deployed module of a crash test 1990					
17. Key Words Frontal impact Air bag deployment			18. Distribution Statement General Public		
19. Security Classif. (of this report) None		20. Security Classif. (of this page) None		21. No. of Pages 26	
				22. Price	

Form DOT F 1700.7 (8-69)

Ford Taurus and found similar deposits inside the air bag. Upon review of the crash test film for this vehicle, the air bag deployed in a normal, symmetrical sequence.

CALSPAN LIMITED ON-SITE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 90-19

FLEET - 1990 FORD TAURUS STATION WAGON
LOCATION - [REDACTED], NY

SUMMARY

This limited on-site investigation involved the inspection of the deployed air bag module assembly from a 1990 Ford Taurus that was involved in a front to rear impact sequence with a 1979 Pontiac. The crash occurred on a state route in [REDACTED] NY on [REDACTED] 1990, at [REDACTED] hours. The Ford Taurus was traveling in a northerly direction behind the Pontiac at a driver estimated speed of 30 mph. The driver of the Pontiac stopped suddenly in the northbound travel lane in preparation for a left turn into a shopping plaza. The driver of the Ford Taurus braked in an attempt to avoid impact; however, her vehicle continued forward and impacted the rear of the Pontiac.

The full frontal area of the Ford Taurus impacted the rear of the Pontiac resulting in respective impact forces of 12 and 6 o'clock. The impact displaced the Ford's front bumper and crushed the headlight and grille area of the vehicle. The impact induced deceleration was of sufficient magnitude to deploy the vehicle's driver air bag system.

The driver of the Ford Taurus was a 54 year old female, 65", 122 lbs. She was wearing the active 3-point lap and shoulder belt system. At impact, she was in a normal seated position with both hands on the steering wheel rim. She responded to the 12 o'clock impact force by initiating a forward trajectory and loading the active belt system. Her head moved forward and slightly downward due to the active belt loading and contacted the deployed air bag. The air bag contact resulted in abrasions with surrounding hematomas of both cheeks, a 1 cm abrasion of the chin, swelling of the lips and an abrasion of the mid forehead area. The air bag also displaced and fractured the driver's eyeglass frames (graphite type frames) into a minimum of 9 pieces. The plastic lenses separated from the frames and probably contacted the eye area of the driver resulting in bilateral contusions with hematoma of the upper and lower eyelids. The frame fragments produced 2 semilunar .5" lacerations of the forehead, between the eyebrows and a 2 cm vertical laceration of the mid forehead. The driver also sustained posterior neck pain that probably resulted from the impact force and subsequent air bag contact.

The driver's facial contact with the deployed air bag was located at the 8:45 - 10 o'clock position of the bag. Facial contact was evidenced by lipstick transfers and makeup deposits that were located 6.5" - 12.25" left of the bag's centerline.

The right front passenger of the Ford Taurus was a 14 year old male, 61", 100 lbs. He was also wearing the active 3-point lap and shoulder belt system. The passenger moved forward at impact and loaded the active belt

webbing which prevented him from contact with interior components and possible injury. He did note a dust-like substance within the vehicle immediately following the crash. The passenger also related to the driver's husband that he noticed a smoke-like ring exhaust from the deployed air bag.

The driver's husband was concerned by the severity of his wife's facial injuries and also of the location of the lipstick transfers on the air bag. Following the repair of the vehicle, he retained the air bag module assembly. The husband inspected the inside surface of the air bag by looking through the right venting port with a small flashlight inserted into the left vent port. He noted generant residue deposits on the inside of the bag adjacent to the inflator assembly and therefore suspected a burn-through of the filtering media that possibly resulted in an asymmetrical (lopsided) deployment. The husband ~~calspan~~ notified Ford Motor Co. who sent two representatives to his residence to inspect the module assembly. Following an inspection of the module assembly, the representatives concluded that the air bag deployed properly. The driver's husband subsequently contacted the NHTSA regarding his findings and theory of the air bag deployment.

Calspan conducted an on-site inspection of the module assembly on ~~XXXXXX~~, and verified the location of the facial transfers and internal generant residue deposit. The internal generant residue deposit was located at the 6:30 - 7:30 o'clock position on the neoprene lining adjacent to the steel inflator unit. The residue also covered 3 orange stitches that the husband initially reported as burned away. There was also a small deposit of residue on the filtering screen at the 4 o'clock position. No screen material at the inflator ports was burned or deformed.

Calspan personnel inspected the module assembly of a similar 1990 Ford Taurus that was crash tested for the NHTSA at Calspan. Similar residue deposits were also visible on the bag lining at the 2-3 o'clock position and also at the 8 o'clock position. A frame-by-frame review of the crash test film indicated that the air bag deployed in a normal, symmetrical sequence.

The driver of the accident involved Ford Taurus probably turned her head to the left immediately prior to impact, therefore initially contacting the left side of the deployed air bag.

The 1990 Ford Taurus was within the population of the TRW air bag recall for defective thread joints between the initiator assembly and the inflator housing. The deployed air bag module, however, was not one of the defective units.

CALSPAN LIMITED ON-SITE AIR BAG DEPLOYMENT INVESTIGATION

CALSPAN CASE NO. 90-19

FLEET - 1990 FORD TAURUS STATION WAGON
LOCATION - [REDACTED], NY
ACCIDENT DATE - [REDACTED] 1990

ACCIDENT DATA

Location/Street: State route
City/Township: [REDACTED] NY
Area/Type: Urban/Commercial
Accident Date/Time: [REDACTED] 1990, [REDACTED] hours
Investigating Police Agency: [REDACTED] Police
Accident Type: Car/Car, front to rear impact configuration
Air Bag Vehicle Driver - Minor (AIS-1)
Occupant Injury Severity: Passenger - Not injured

AMBIENCE

Light Conditions: Daylight
Weather: Overcast
Precipitation: Rain
Road Surface: Wet

HIGHWAY

Location: State route
Number of Lanes: 2
Surface: Asphalt
Vertical Alignment: Level
Horizontal Alignment: Right curve
Traffic Density: Moderate to heavy
Speed Limit: 40 mph
Traffic Controls: None

VEHICLES

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Year:	1990	1979
Make:	Ford	Pontiac
Model:	Taurus	
Body Style:	Station wagon	4 dr.
V.I.N.:	1FACP57UXL [REDACTED]	
Mileage:	9,386	
Windshield Damage/Source:	Not damaged	
Fleet:	Private vehicle	
Tow Status:	Towed from scene	N/A, driven from scene
Previous Repairs:	None	Unknown

VEHICLE DAMAGEDeployment Impact

Object Struck:	Vehicle #2	
Event Number:	1	
Damage Location:	Front, distributed	Rear, distributed
CDC:	12-FDEW-1 (estimated, vehicle repaired)	06-BDEW-1
Estimated Maximum Crush:	Unknown	Unknown
Damaged Components:	Front bumper and bumper facia, bumper energy absorbing units, grille, header panel, headlight assemblies, hood and left front fender (hood and fender were repaired and not replaced)	Unknown
Repair Estimate:	\$4715.76 inclusive of driver air bag module and front crash sensors	Unknown
Interior (Air Bag Vehicle):	None reported	

COLLISION SEQUENCE

Pre-Crash:

The air bag equipped 1990 Ford Taurus station wagon was traveling in a northerly direction on the state route at a driver estimated travel speed of 30 mph. Vehicle #2, a 1979 Pontiac, was traveling ahead of the Ford as the vehicles approached a shopping plaza. The driver of vehicle #2 reportedly stopped suddenly in preparation for a left turn into the shopping plaza. The driver of the Ford Taurus noted the brakelights of the Pontiac, but did not detect a left turn signal. She subsequently braked in an attempt to avoid impact with the rear of the Pontiac.

Crash:

The full frontal area of the Ford Taurus impacted the rear of the 1979 Pontiac resulting in a 12 o'clock/6 o'clock impact configuration. The driver of the Ford estimated her impact speed at 15 mph. The distributed frontal impact sequence displaced the Ford's front bumper and fractured the headlight assemblies and grille of the Taurus. As a result, the vehicle sustained a sufficient longitudinal deceleration required to deploy the supplemental driver air bag system.

The belted driver of the Ford Taurus loaded the deployed air bag with her face, sustaining multiple abrasions. The contact also fractured her eyeglasses which lacerated her forehead. The belted right front passenger of the vehicle was not injured.

The right front passenger noted a dust-like substance within the vehicle as it came to rest. He further stated that he noted smoke rings exhausting from the venting ports of the deflated air bag.

Post-Crash:

Final Rest -

The involved vehicles came to rest near the point of impact, facing in a northerly direction.

Driver Activities -

The driver of the Ford Taurus remained in her vehicle following the crash and waited for police and rescue personnel to arrive on-scene.

Police Activities -

The [REDACTED] Police dispatched a patrol vehicle to the accident scene. Following the officer's investigation of the crash, he issued traffic summonses to both drivers. The driver of the air bag vehicle was charged with following too closely while the driver of vehicle #2 was charged with driving while intoxicated.

Rescue Activities -

A rescue unit from a local fire company responded to the accident scene. Rescue personnel initially treated the driver of the Ford Taurus in her vehicle. They subsequently removed her from the vehicle on a backboard and transported her to a [REDACTED] for treatment of her injuries.

COLLISION SEQUENCE (CONT'D.)

Post-Crash (Cont'd.):

Scene The Ford Taurus was left abandoned at the accident scene.
Clearance - The vehicle was later towed from the scene by a local auto
body repair shop that subsequently repaired the vehicle.

DRIVER DATA

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Age:	54	29
Sex:	Female	Male
Height:	65"	
Weight:	122 lbs.	
Active Restraint System Usage:	3-point lap and shoulder belt system	
Usage Source:	Husband interview	
Eyeglasses:	Graphite framed prescription eyeglasses with plastic lenses, frames fractured into 9 pieces	
Vehicle Familiarity:	9 months, this driver was the primary driver of the vehicle	
Route Familiarity:	Weekly	
Trip Plan:	Unknown	
Manner of Leaving Scene:	Ambulance	
Type of Medical Treatment:	Treated at a local hospital for her injuries and released	

DRIVER INJURIES

<u>Injury</u>	<u>Severity (OIC/AIS)</u>	<u>Source</u>
2 cm vertical laceration of the mid forehead	Minor (FSLI-1)	Fractured eyeglass frames/ air bag
2 semilunar 1/2" lacerations at the medial end of the eyebrows	Minor (FSLI-1)	Fractured eyeglass frames/ air bag
Abrasion surrounding forehead lacerations	Minor (FSAI-1)	Air bag
Hematoma and contusion of both upper and lower eyelids	Minor (FLC0-1, FRC0-1)	Eyeglass lenses/ air bag contact

DRIVER INJURIES (CONT'D.)

<u>Injury</u>	<u>Severity (OIC/AIS)</u>	<u>Source</u>
Abrasions of both cheeks with surrounding hematoma	Minor (FLAI-1, FRAI-1, FLCI-1, FRCI-1)	Air bag
1 cm abrasion of the chin	Minor (AIS-1)	Air bag
Swelling of the upper and lower lips	N/A	Air bag
Neck pain, arthritic condition	N/A	Impact force/ air bag contact

DRIVER KINEMATICS

The driver of the Ford Taurus was in a normal seated position at impact with both hands on the steering wheel rim. She was fully restrained by the active 3-point lap and shoulder belt system. Belt usage was determined from interview data obtained from the driver's husband and from blood stains on the shoulder belt webbing. The driver was wearing prescription eyeglasses that were composed of graphite-type frames and plastic lenses.

At impact, the supplemental driver air bag system deployed. The driver initiated a forward trajectory in response to the frontal impact sequence. The active belt system restricted the forward movement of the driver's body; however, her head continued forward and slightly downward. Her face contacted the deployed air bag at the 8:45 - 10 o'clock position, depositing lipstick transfers and makeup deposits 6.5 - 12.25" left of the bag's centerline. The location of the makeup transfers indicate that the driver probably turned her head to the left at or immediately prior to impact.

The driver's contact with the deployed air bag resulted in a 1 cm abrasion of the chin, swelling of the upper and lower lips, abrasions of both cheeks with surrounding hematoma, and a mid forehead abrasion. The air bag contact displaced and fractured the driver's eyeglass frames into 9 pieces. The plastic lenses separated from the fractured frames and were probably compressed into the eye socket area resulting in contusions with hematoma of the upper and lower eyelids bilaterally. The fractured frames were displaced upward into the driver's forehead resulting in 2 semilunar .5" lacerations [REDACTED] at the medial end of the eyebrows and a 2 cm vertical laceration of the midforehead. She also sustained posterior neck pain from the impact force and air bag contact.

The driver was removed from the vehicle on a backboard by rescue personnel and transported to a [REDACTED] [REDACTED] for treatment of her injuries. The forehead lacerations required 9 sutures to close the wounds. She was released from the hospital following treatment.

The sutures were removed on [REDACTED]. The doctor who removed the sutures noted on his report that she also sustained caustic burns with reddened areas of the face from contact with air bag propellant. All facial injuries were identified as abrasions on the emergency room report following her initial treatment. The air bag was intact and was vented by the two ports located on the module (back) side of the bag, away from the driver, therefore eliminating the possibility of facial burns.

PASSENGER DATA

Age:	14
Sex:	Male
Height:	61"
Weight:	100 lbs.
Seated Position:	Right front
Active Restraint System Usage:	3-point lap and shoulder belt system
Usage Source:	Interview data, police report
Type of Medical Treatment:	N/A, not injured

PASSENGER INJURIES

<u>Injury</u>	<u>Severity (OIC/AIS)</u>	<u>Source</u>
Not injured	N/A	N/A

PASSENGER KINEMATICS

The right front passenger of the Ford Taurus was probably in a normal seated position at impact. He was wearing the active 3-point lap and shoulder belt system. At impact, he moved forward and loaded the active belt system which prevented him from contact with interior components and possible injury.

AIR BAG SYSTEM

The 1990 Ford Taurus was equipped with a supplemental driver air bag system that deployed as a result of the vehicle's frontal impact sequence with the rear of a 1979 Pontiac. The belted driver of the Ford sustained multiple abrasions with hematoma of the face and swelling of the lips, nose, and eye areas from air bag contact. The air bag also fractured the driver's eyeglass frames which lacerated her forehead requiring 9 sutures.

The driver's initial contact with the deployed air bag was located at the 8:45 - 10 o'clock position of the bag. A lipstick transfer was located 9 - 11.25" left of center and .25 - 1.75" below the horizontal centerline of the air bag. A faint continuation of the lipstick transfer extended to the center (tether reinforcement) area of the bag. An oblong makeup deposit was located 6.5 - 12.25" left of center which extended .25 - 3.0" above the horizontal centerline. There was also a faint crossing pattern that appeared to be a lipstick transfer that was centered 8.25" left and 4.75" above the horizontal centerline. This transfer probably occurred post-crash as the bag deflated. Blood spatters were noted to both sides of the air bag as the driver remained in her vehicle following impact.

AIR BAG SYSTEM (CONT'D.)

The driver's husband suspected a malfunction of the air bag system based on the severity of his wife's injuries and the location of her initial contact with the bag. Following the repair of the vehicle, he retained and inspected the air bag module assembly by inserting a flashlight into the left venting port and sighting through the right vent port at the inflator assembly. He observed a generant residue deposit on the inside surface of the bag material at approximately the 9 o'clock position. He reported that the residue also appeared to have burned through 3 orange stitches that were located immediately outboard of the inflator assembly. Based on the residue deposit, the husband suspected a burn-through of the cooling filter at the 9 o'clock position. He further theorized that if the filter failed at this position, a rush of hot gas could have entered the bag through this port resulting in an asymmetrical (lopsided) deployment, with the left side of the bag deploying more rapidly than the right side. The husband stated that the asymmetrical deployment theory would explain the location of the driver's facial contact with the bag and severity of her injuries.

A Calspan representative inspected the air bag module assembly with the driver's husband at their residence on [REDACTED] 1990. Using a similar inspection method with a flashlight and viewing through the right venting port, the residue deposit was visible on the inside surface of the air bag immediately outboard of the inflator. The deposit was, however, located at the 6:30 - 7:30 o'clock position on the bag material and at 5:30 - 7:30 on the steel inflator housing. The residue also covered the three orange stitches previously mentioned. The stitches were in place and were not burned through or missing. The remainder of the interior surface of the air bag was clean, with no deposits or discoloration.

The filter screen of the inflator port at the 4 o'clock position contained a deposit of generant residue; however, the filter was intact with no visible (exterior) burn-through. The internal deposits were located approximately 45 - 75° counterclockwise or below the husband's original reported positions.

The Calspan representative also inspected the air bag module assembly of a similar 1990 Ford Taurus that was crash tested at Calspan under contract to the NHTSA. Using the similar inspection process of the internal air bag surface and inflator assembly, generant residue deposits were visible on the bag material at the 2-3 o'clock position and also at the 8 o'clock position. Heavy generant deposits were also visible on the filter screen at the 2-3 o'clock position with no visible burn-through of the screen material. The 16 mm film of the test was reviewed frame by frame and the deployment sequence of the bag was closely observed. Following numerous reviews, the air bag appeared to have deployed in a normal, symmetrical sequence.

Based on the limited data that was available for this investigation (i.e., visual inspection of the air bag module assembly and driver injury data), it is difficult to prove or disprove that the air bag deployed in a normal symmetrical sequence. The crash test vehicle's module yielded heavier generant deposits; however, the film review supported a normal symmetrical deployment for that vehicle. It is also probable that the driver turned her head and/or body to the left immediately prior to impact as a reaction to the impending collision. This movement would certainly support facial contact with the left area of the deployed air bag.

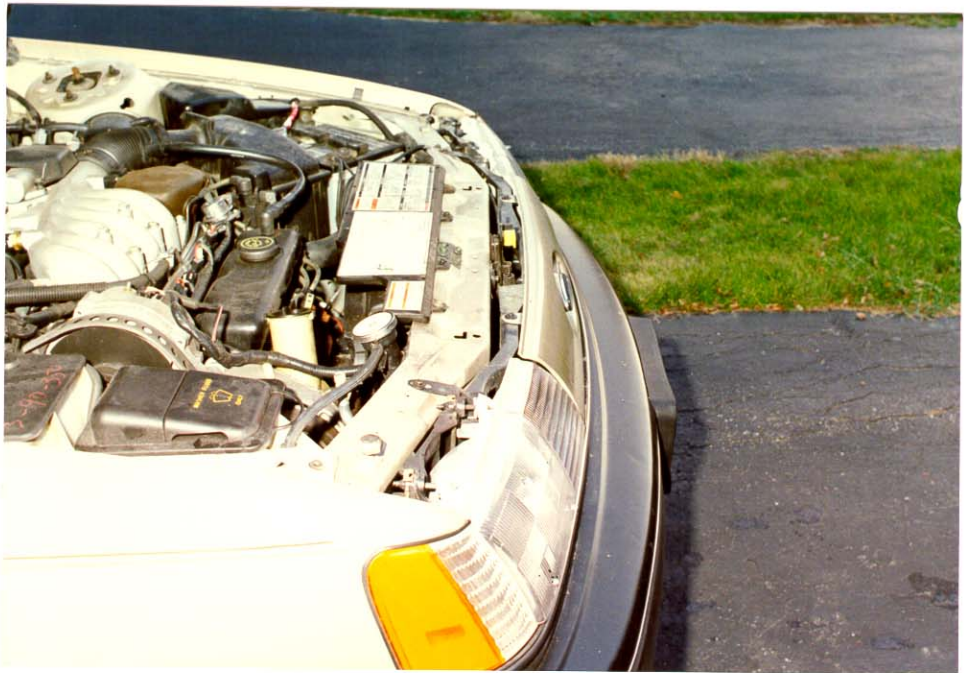
SELECTED PRINTS



Frontal View Of The Repaired Ford Taurus



Left Front Three-Quarter View Of The Vehicle



Perpendicular View Across The Radiator Support Panel



Left Front Door Mounted Identification Label



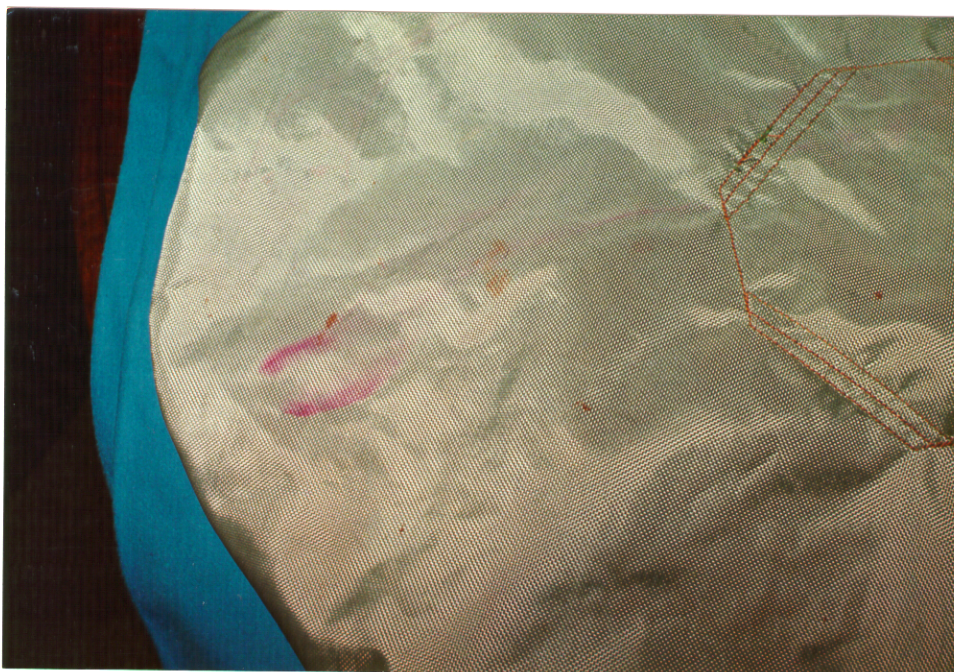
Overall View Of The Interior Of The Ford Taurus



Replaced Driver Air Bag Module



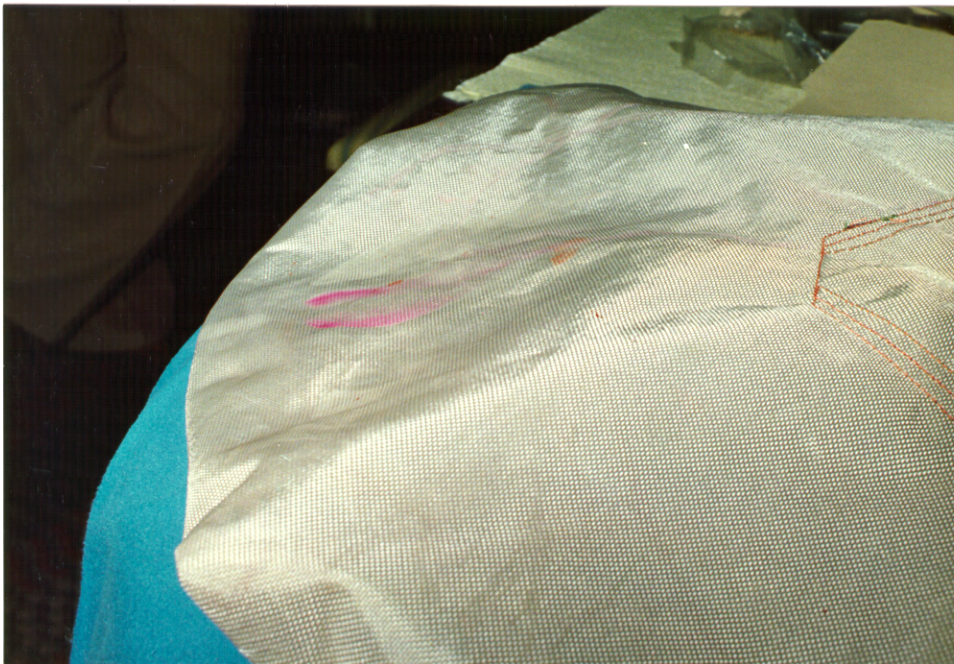
Deployed Driver Air Bag



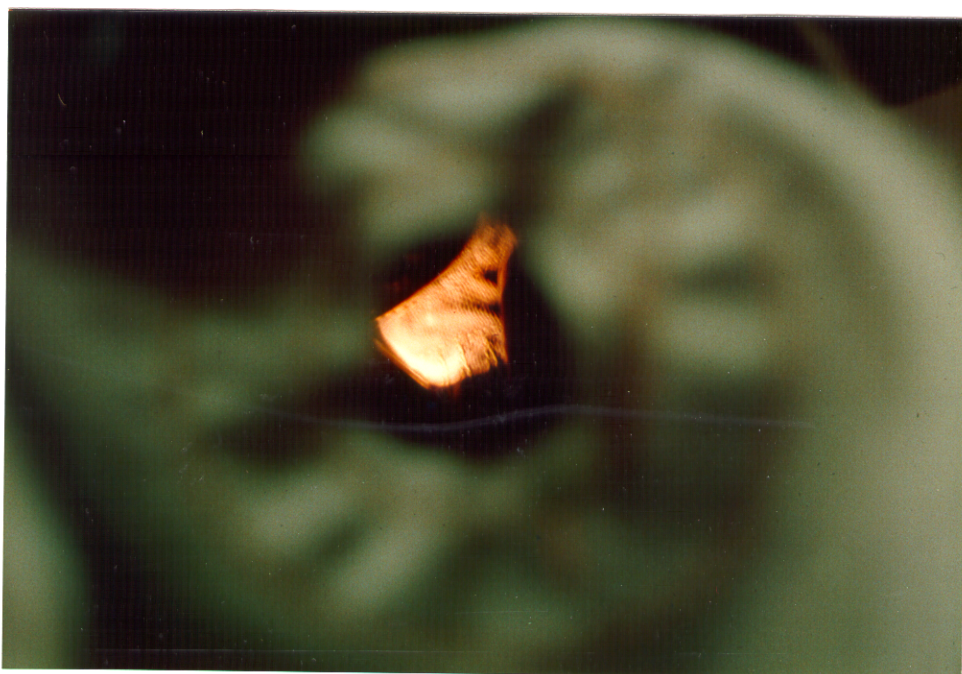
Lip Stick Transfer On The Air Bag At The 8:30 Position



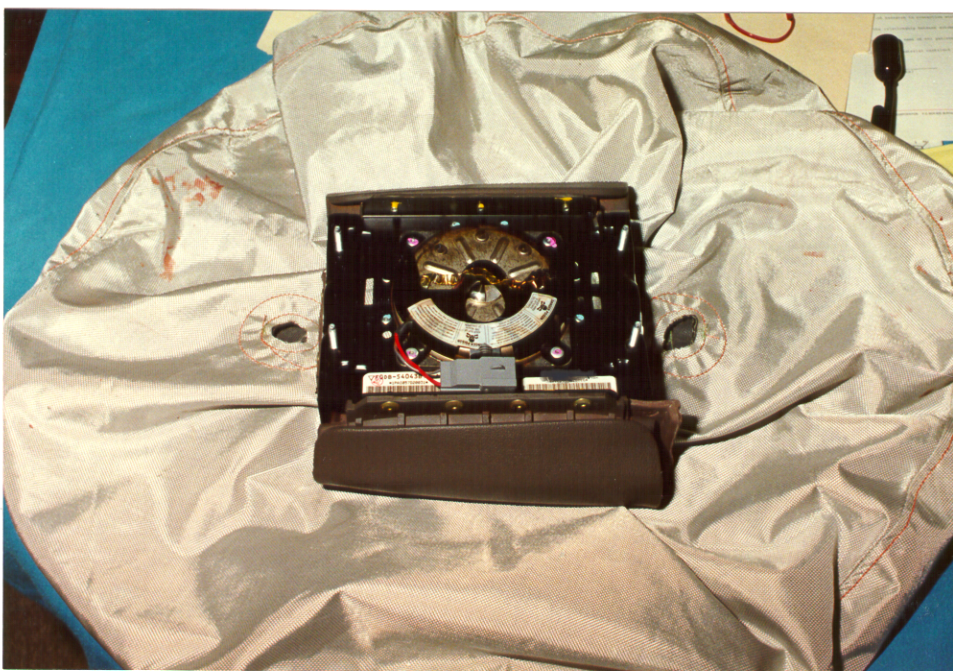
Lip Stick Transfers Fade At The Tether Reinforcement Stitching



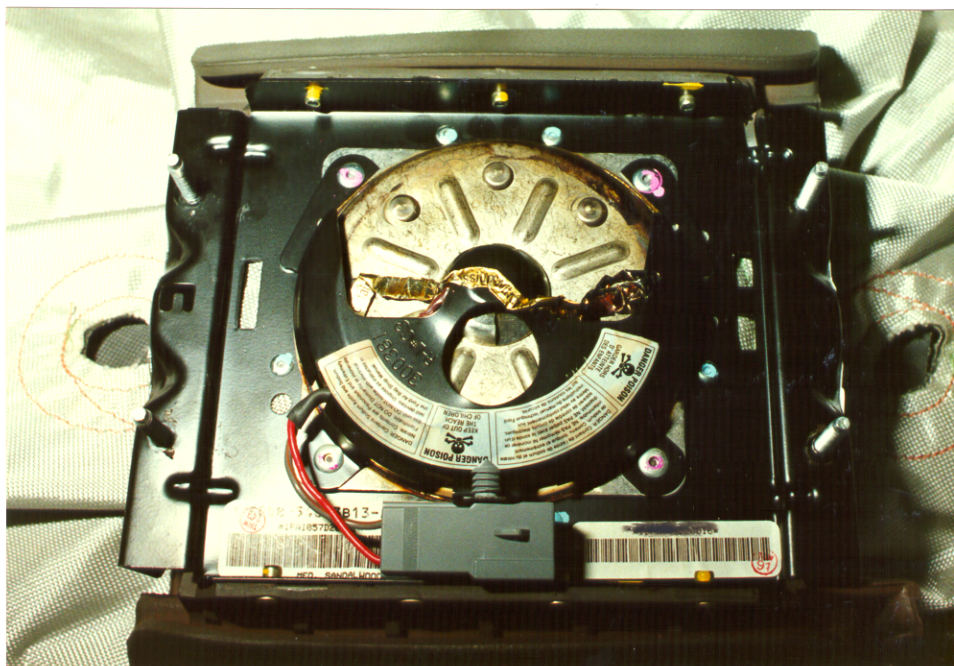
Makeup Transfers Above The Lip Stick



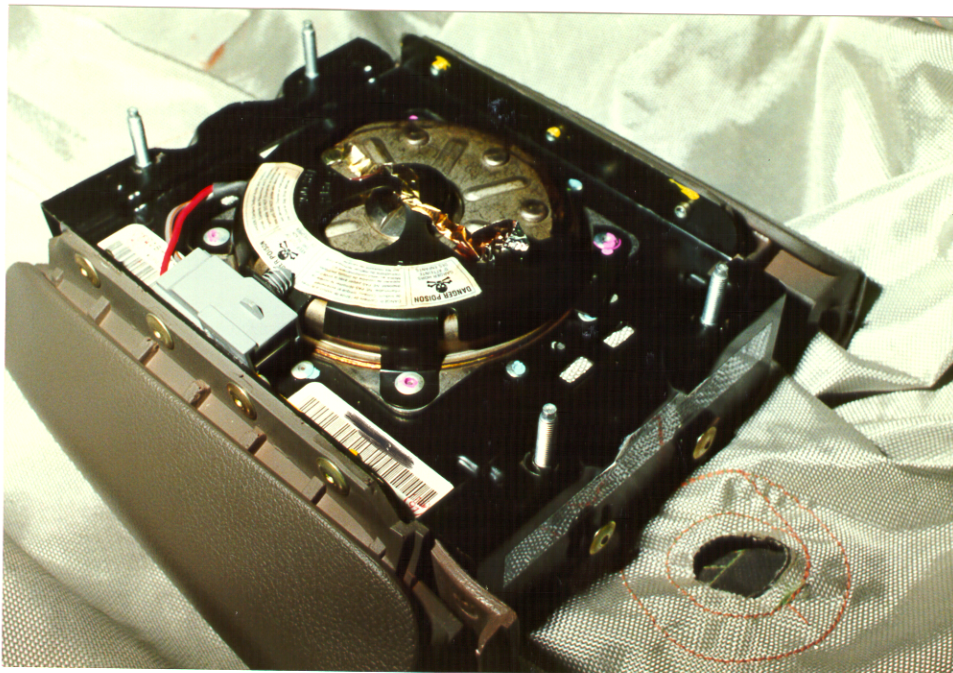
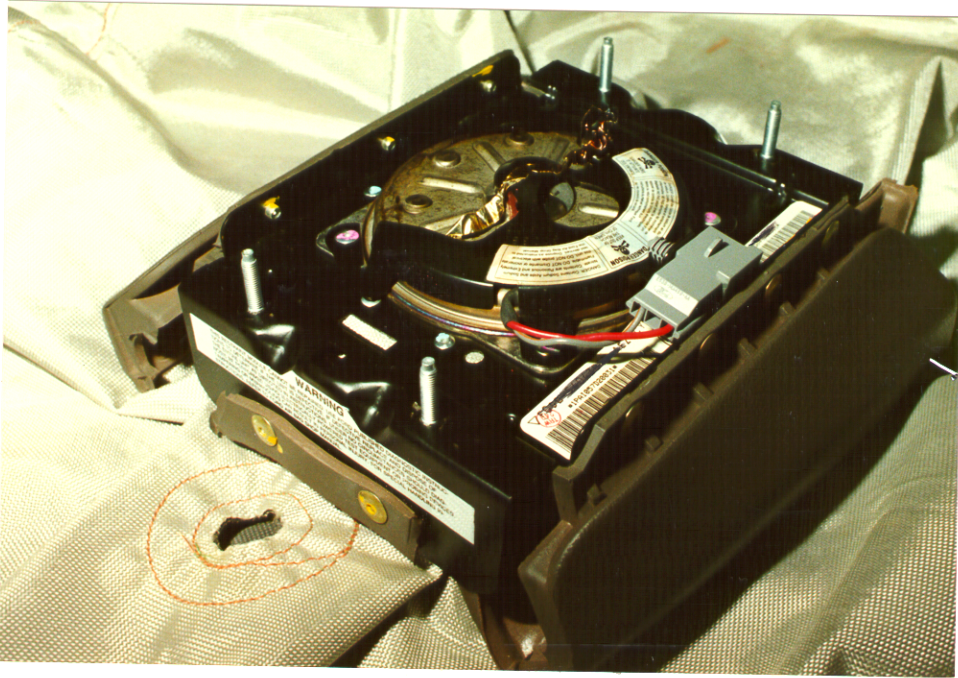
Generant Residue Deposits On The Inside Surface Of The Air Bag
Adjacent To The Inflator Assembly At The 6:30 - 7:30 O'Clock Position



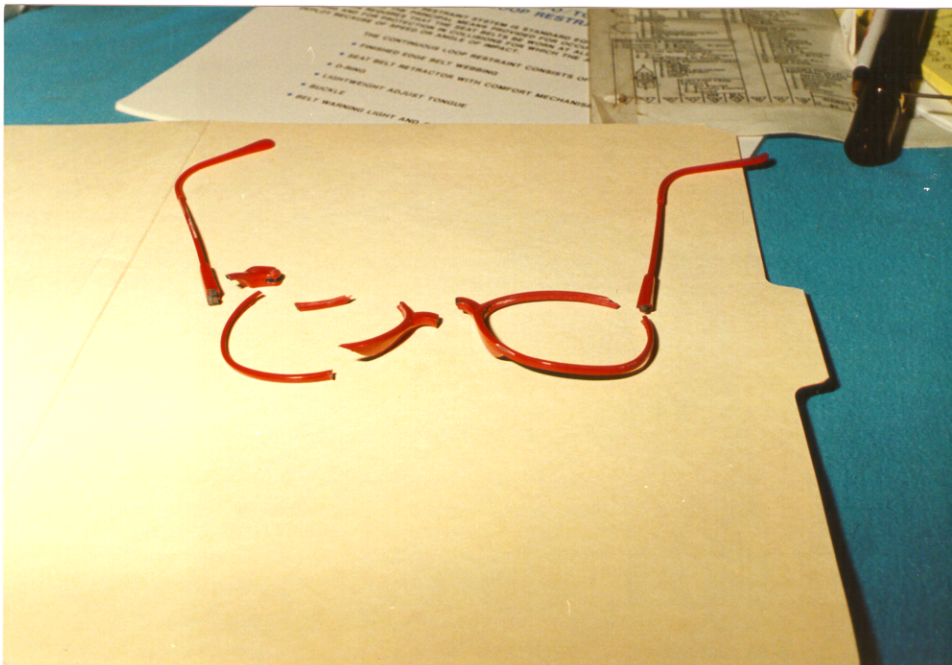
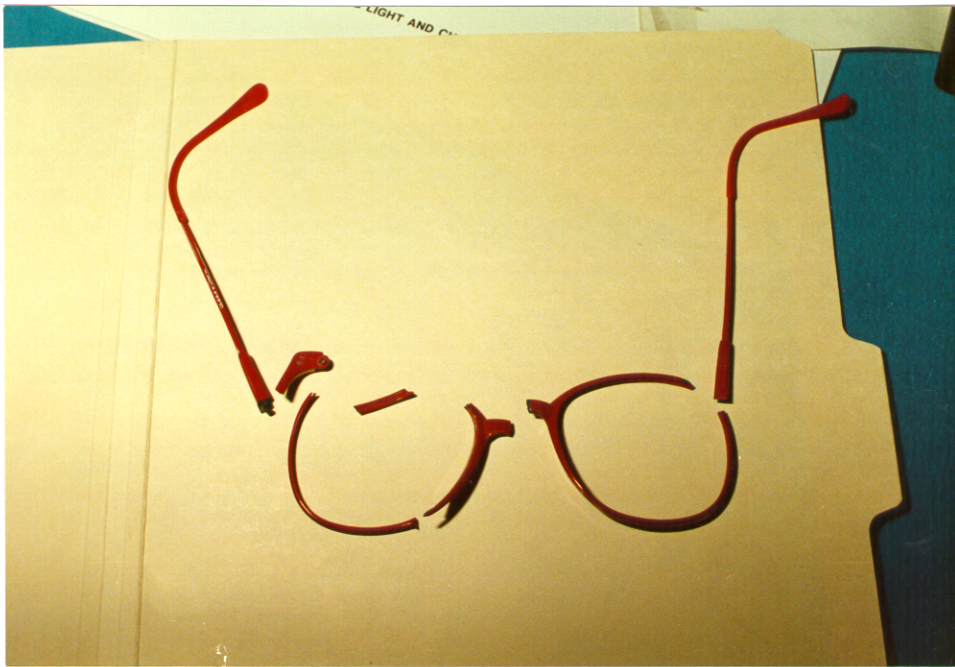
Posterior View Of The Air Bag And Inflator Assembly



Close Up View Of The Inflator



Offset Views Of The Inflator Assembly



Fractured Driver's Eyeglass Frames, Graphite Material

SLIDE INDEX

<u>Slide No(s).</u>	<u>Description</u>
1	Driver injury mannequin
2	Deployed driver air bag
3-7	Lip stick and makeup transfers on air bag
8	Left air bag vent port
9	Right air bag vent port
10,11	Generant residue on inside surface of air bag adjacent to inflator at the 6:30 - 7:30 o'clock position
12	Posterior view of the module assembly
13,14	Driver's fractured eyeglass frames

Forehead lacerations were surrounded by abrasion (AIS-1), air bag contact

2 semilunar .5" lacerations at the medial end of the eyebrows

2 cm vertical laceration of the mid forehead area (AIS-1), eyeglass frames/air bag contact



Hematoma and contusion of both upper and lower eyelids (AIS-1), eyeglass lenses/air bag contact

Abrasions of both cheeks with surrounding hematoma (AIS-1), air bag contact

Swelling of the upper and lower lips

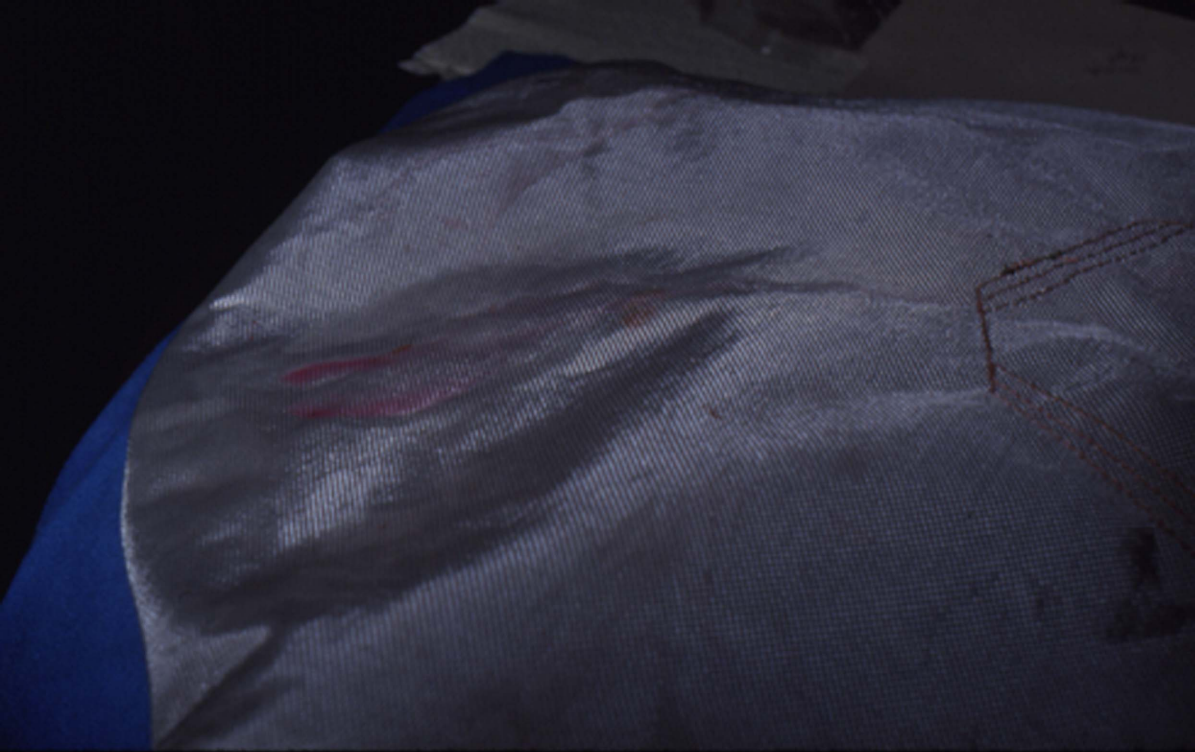
Neck pain, arthritic condition

1 cm abrasion of the chin (AIS-1), air bag contact

















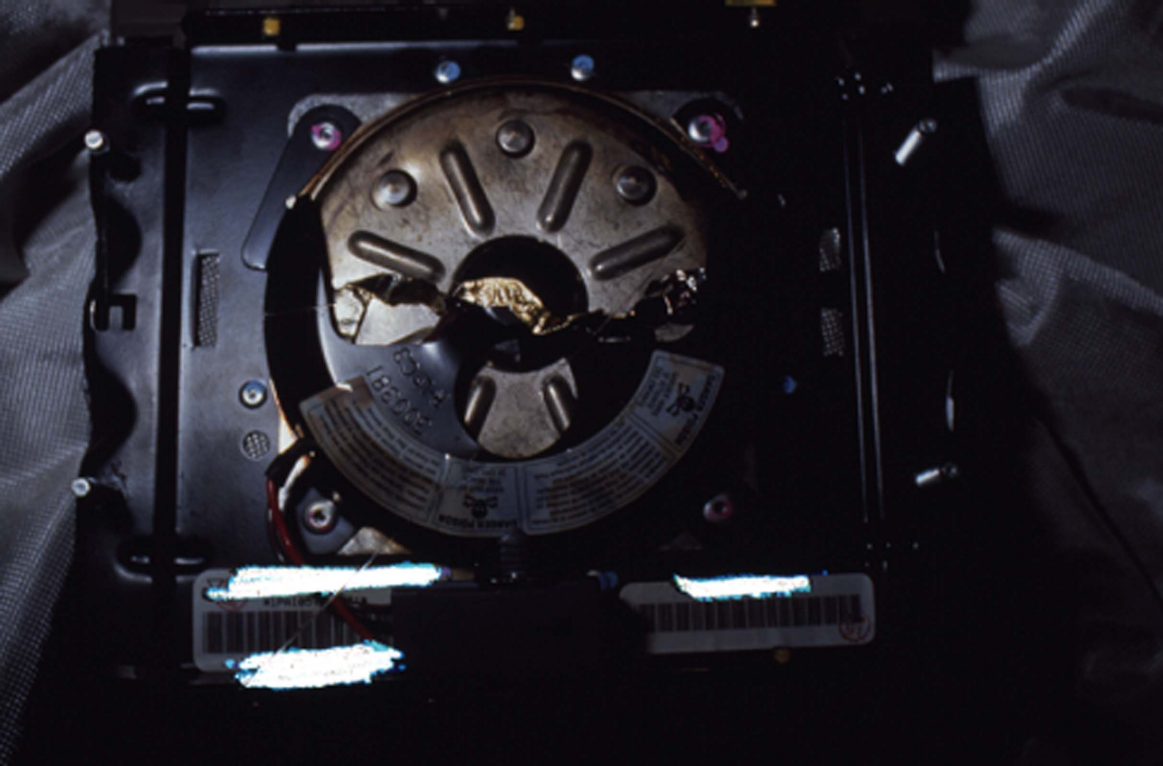
1985 TEMPO
US LOOP RES

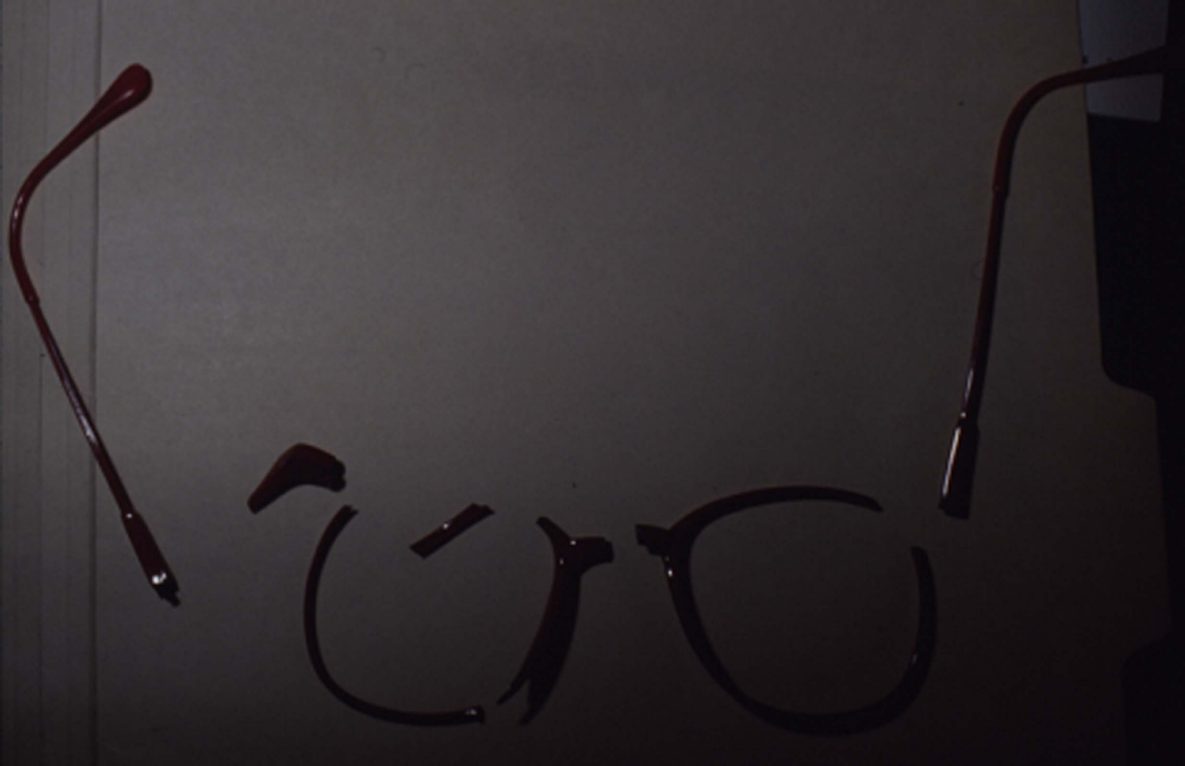
RAINT SYSTEM IS STAND.
MEANS PROVIDED FOR
SEAT BELTS BE WORK
COLLISIONS FOR WH
OF IMPACT.

RAINT CO











APPENDIX A

Police Accident Report

POLICE ACCIDENT REPORT

POLICE AGENCY COPY 1

BEST AVAILABLE COPY

Page of Pages
Local Codes

Accident Date: Mo./Day/Year 90
Day of Week
Time AM/PM
No. of Vehicles 2
No. Injured 1
No. Killed 0
Non-Highway
Not Investigated at Scene
Left Scene
Police Photos Yes No

VEHICLE 1
Name - exactly as printed on license
Number and Street
City State Zip Code
Date of Birth Sex Un-Licensed No. of Occup. Public Property Damaged State of License
Name - exactly as printed on registration
Number and Street
City State Zip Code
Plate Number State of Reg. Yr. & Vehicle Make Vehicle Type Ins. Code

VEHICLE 2
Name - exactly as printed on license
Number and Street
City State Zip Code
Date of Birth Sex Un-Licensed No. of Occup. Public Property Damaged State of License
Name - exactly as printed on registration
Number and Street
City State Zip Code
Plate Number State of Reg. Yr. & Vehicle Make Vehicle Type Ins. Code

Check if involved vehicle is more than 95" wide, more than 34' long.

VEHICLE 1 DAMAGE
No Damage Undercarriage

VEHICLE 2 DAMAGE
No Damage Undercarriage

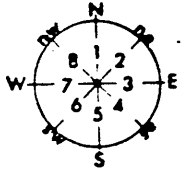
ACCIDENT DIAGRAM
Rear End Left Turn Right Angle Right Turn Head On
Overtaking Left Turn Right Turn Sideswipe

Reference Marker DMV USE ONLY County City Town
Route No. and Street Name on
Ticket/Arrest Other Ticket/Arrest Number(s)
Opr 1 Pedestrian
Opr 2 Bicyclist
Violation Section(s)
Accident Description/Officer's Notes

Names - If Deceased, Give Date of Death

	8	9	10	11	12	13	14	15	16	17	18	
A	1	1	4	1	29	M						DRIVER V-1
B	1	2	5	1	1	M						
C	1	3	4	1	25	F						
D	1	4	2	1	4	F						
E	2	1	4	1	54	F	1	11	6			
F	2	3	4	1	13	M						
G												

GN HERE
Officer's Rank and Name
Badge No.
Department
Precinct/Post Troop/Zone
Station/Beat/Sector
Reviewing Officer
Date/Time Reviewed

PEDESTRIAN/BICYCLIST LOCATION 1. Pedestrian/Bicyclist at Intersection 2. Pedestrian/Bicyclist Not at Intersection PEDESTRIAN/BICYCLIST ACTION 1. Crossing, With Signal 2. Crossing, Against Signal 3. Crossing, No Signal, Marked Crosswalk 4. Crossing, No Signal or Crosswalk 5. Riding/Walking Along Highway With Traffic 6. Riding/Walking Along Highway Against Traffic 7. Emerging from in Front of/Behind Parked Vehicle 8. Going To/From Stopped School Bus 9. Getting On/Off Vehicle Other Than School Bus 10. Pushing/Working On Car 11. Working in Roadway 12. Playing in Roadway 13. Other Actions in Roadway* 14. Not in Roadway (Indicate)* TRAFFIC CONTROL 1. None 2. Traffic Signal 3. Stop Sign 4. Flashing Light 5. Yield Sign 6. Officer/Guard 7. No Passing Zone 8. RR Crossing Sign 9. RR Crossing Flashing Lt. 10. RR Crossing Gates 11. Stopped School Bus - Red Lights Flashing 12. Highway Work Area 20. Other*	APPARENT CONTRIBUTING FACTORS HUMAN 2. Alcohol Involvement 3. Backing Unsafely 4. Driver Inattention (Indicate)* 5. Driver Inexperience (Indicate)* 6. Drugs (Illegal) 7. Failure to Yield Right-of-Way 8. Fell Asleep 9. Following Too Closely 10. Illness 11. Lost Consciousness 12. Passenger Distraction 13. Passing or Lane Usage Improper 14. Pedestrian's/Bicyclist's Error/Confusion 15. Physical Disability 16. Prescription Medication 17. Traffic Control Disregarded 18. Turning Improperly 19. Unsafe Speed 20. Unsafe Lane Changing 40. Other Human* VEHICULAR 41. Accelerator Defective 42. Brakes Defective 43. Headlights Defective 44. Other Lighting Defects 45. Oversized Vehicle 46. Steering Failure 47. Tire Failure/Inadequate 48. Tow Hitch Defective 49. Windshield Inadequate 60. Other Vehicular* ENVIRONMENTAL 61. Animal's Action 62. Glare 63. Lane Marking Improper/Inadequate 64. Obstruction/Debris 65. Pavement Defective 66. Pavement Slippery 67. Shoulders Defective/Improper 68. Traffic Control Device Improper/Non-Working 69. View Obstructed/Limited 80. Other Environmental*	VEHICLE 1 19 VEHICLE 1 20 VEHICLE 2 21 VEHICLE 2 22 VEHICLE 1 23 VEHICLE 2 24 VEHICLE 1 25 VEHICLE 2 26 LOCATION OF FIRST EVENT 27 1. On Roadway 2. Off Roadway TYPE OF ACCIDENT COLLISION WITH 1. Other Motor Vehicle 2. Pedestrian 3. Bicyclist 4. Animal 5. Railroad Train 10. Other Object (Not Fixed)* COLLISION WITH FIXED OBJECT 11. Light Support/Utility Pole 12. Guide Rail 13. Crash Cushion 14. Sign Post 15. Tree 16. Building/Wall 17. Curbing 18. Fence 19. Bridge Structure 20. Culvert/Head Wall 21. Median/Barrier 22. Snow Embankment 23. Earth Embankment/Rock Cut/Ditch 24. Fire Hydrant 30. Other Fixed Object* NON-COLLISION 31. Overturned 32. Fire/Explosion 33. Submersion 34. Ran Off Roadway Only 40. Other*
LIGHT CONDITIONS 1. Daylight 2. Dawn 3. Dusk 4. Dark-Road Lighted 5. Dark-Road Unlighted ROADWAY CHARACTER 1. Straight and Level 2. Straight and Grade 3. Straight at Hillcrest 4. Curve and Level 5. Curve and Grade 6. Curve at Hillcrest ROADWAY SURFACE CONDITION 1. Dry 2. Wet 3. Muddy 4. Snow/Ice 5. Slush 0. Other* WEATHER 1. Clear 2. Cloudy 3. Rain 4. Snow 5. Sleet/Hail/Freezing Rain 6. Fog/Smog/Smoke 0. Other* WHICH VEHICLE OCCUPIED 1. Vehicle No. 1 B. Bicyclist O. Other* 2. Vehicle No. 2 P. Pedestrian POSITION IN/ON VEHICLE 1. Driver 2-7. Passengers 8. Riding/Hanging On Outside SAFETY EQUIPMENT USED 1. None 2. Lap Belt 3. Harness 4. Lap Belt and Harness 5. Child Restraint 6. Helmet 0. Other* EJECTION FROM VEHICLE 1. Not Ejected 2. Partially Ejected 3. Ejected AGE 12 SEX 13 8 9 10 11 14 15 16 17 BY TO 18	State of New York Department of Motor Vehicles POLICE ACCIDENT REPORT MV-104A (6/88) * EXPLAIN IN ACCIDENT DESCRIPTION IF A QUESTION DOES NOT APPLY, ENTER A DASH (—). IF AN ANSWER IS UNKNOWN, ENTER AN "X" LOCATION OF MOST SEVERE PHYSICAL COMPLAINT 1. Head 2. Face 3. Eye 4. Neck 5. Chest 6. Back 7. Shoulder-Upper Arm 8. Elbow-Lower Arm-Hand 9. Abdomen - Pelvis 10. Hip-Upper Leg 11. Knee-Lower Leg-Foot 12. Entire Body TYPE OF PHYSICAL COMPLAINT 1. Amputation 2. Concussion 3. Internal 4. Minor Bleeding 5. Severe Bleeding 6. Minor Burn 7. Moderate Burn 8. Severe Burn 9. Fracture - Dislocation 10. Contusion - Bruise 11. Abrasion 12. Complaint of Pain 13. None Visible VICTIM'S PHYSICAL AND EMOTIONAL STATUS 1. Apparent Death 2. Unconscious 3. Semiconscious 4. Incoherent 5. Shock 6. Conscious INJURED TAKEN 17 BY TO 18	DIRECTION OF TRAVEL  PRE-ACCIDENT VEHICLE ACTION 1. Going Straight Ahead 2. Making Right Turn 16. Making Right Turn on Red 3. Making Left Turn 17. Making Left Turn on Red 4. Making U Turn 5. Starting from Parking 6. Starting in Traffic 7. Slowing or Stopping 8. Stopped in Traffic 9. Entering Parked Position 10. Parked 11. Avoiding Object in Roadway 12. Changing Lanes 13. Overtaking 14. Merging 15. Backing 20. Other* LOCATION OF FIRST EVENT 27 1. On Roadway 2. Off Roadway TYPE OF ACCIDENT COLLISION WITH 1. Other Motor Vehicle 2. Pedestrian 3. Bicyclist 4. Animal 5. Railroad Train 10. Other Object (Not Fixed)* COLLISION WITH FIXED OBJECT 11. Light Support/Utility Pole 12. Guide Rail 13. Crash Cushion 14. Sign Post 15. Tree 16. Building/Wall 17. Curbing 18. Fence 19. Bridge Structure 20. Culvert/Head Wall 21. Median/Barrier 22. Snow Embankment 23. Earth Embankment/Rock Cut/Ditch 24. Fire Hydrant 30. Other Fixed Object* NON-COLLISION 31. Overturned 32. Fire/Explosion 33. Submersion 34. Ran Off Roadway Only 40. Other*

COVER SHEET

G

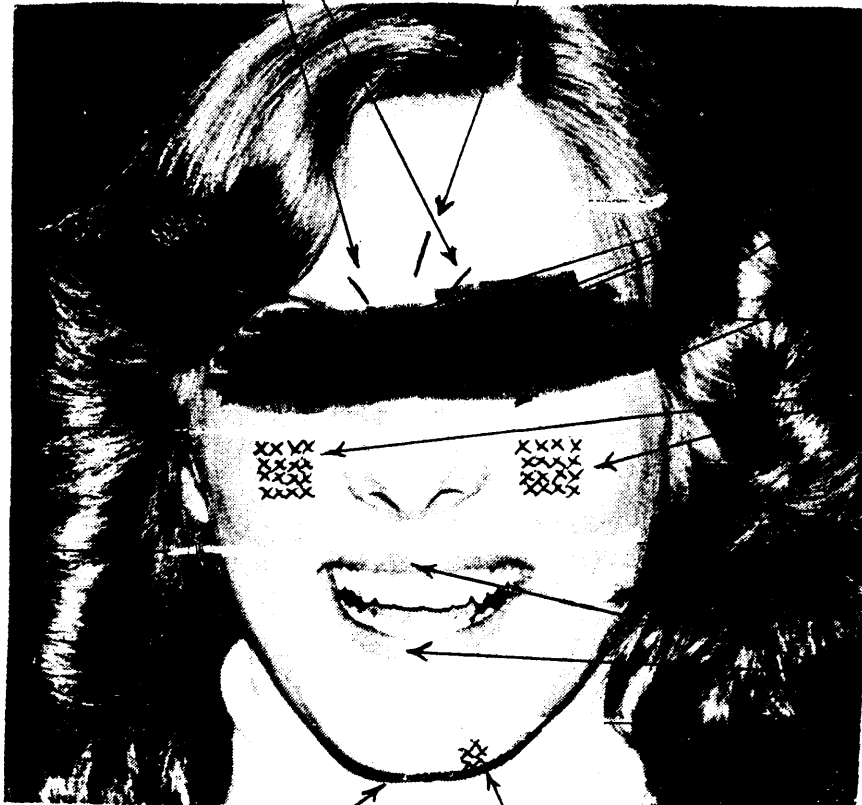
APPENDIX B

Air Bag Driver Injury Mannequin

Forehead lacerations were surrounded by abrasion (AIS-1), air bag contact

2 semilunar .5" lacerations at the medial end of the eyebrows

2 cm vertical laceration of the mid forehead area (AIS-1), eyeglass frames/air bag contact



Hematoma and contusion of both upper and lower eyelids (AIS-1), eyeglass lenses/air bag contact

Abrasions of both cheeks with surrounding hematoma (AIS-1), air bag contact

Swelling of the upper and lower lips

Neck pain, arthritic condition

1 cm abrasion of the chin (AIS-1), air bag contact

APPENDIX C

Air Bag Contact Schematic

Lip stick or eye makeup
transfers (probable
post-crash transfers)

Makeup
transfer

Lip stick
transfer continues
to tether reinforce-
ment stitching

